SHS 806 / SHS 810 / SHS 815 / SHS 820

Handheld Digital Oscilloscopes	60MHz / 100MHz /150MHz / 200MHz

Features	Applications
1GSa/s & up to 50GSa/s sampling rate 2 Channels 5,7" TFT LCD color display Standard setup interfaces: USB device, USB host, USB storage update, PC communication and PictBridge print are available Multiple language user interface Rechargeable Li battery pack, compact, portable, fit for outdoor operation	Outdoor measure Circuit measure Wind power, PV power and other new energy equipment test Automotive electron, electric automobile test Electric power system, strong electricity test Industry scenes electric debug testing and measuring Education and science research Quality control

Characteristics

Dual – input, combine oscilloscope, multimeter and recorder (including TrendPlot and waveform recorder) in one unit.
Input voltage: input voltage through BNC is up to CAT II 300V and CAT III 150V;
Standard probe: 10X CAT II 400V;
Optional probe: 10X CAT II 1000V and 10X CAT III 600V;
Oscilloscope and multimeter safety grade is up to CAT II 600V and CAT III 300V.
5.7 inch TFT color LCD display.
Max. 200MHz bandwidth, 1GSa/s real-time sampling rate single channel, up to 50GSa/s equivalent sampling rate, 2Mpts memory depth.
With 6000 dots display resolution multimeter and provides measurements of DCV, ACV, DCI, ACI, resistance, diode, capacitance and continuity.
Support scope TrendPlot, meter TrendPlot and scope recorder.
32 automatic measurements, 3 cursor measure modes.
4 digital filter mode: low pass, high pass, band pass, band limit.
Math functions: +, - , ×, ÷, FFT operations.
Multiple language user interface.
Standard configuration interface: USB device, USB host.
Support USB storage and update; support PC remote control and PictBridge print.
Rechargeable Li battery pack, compact, portable, fit for outdoor operation.

S.E.A. electronics GmbH, Sylvesterallee 2, 22525 Hamburg, Tel. +49-40-25494862, osc@sea-electronics.de

Datasheet: SHS 800

Model Index	SHS 806	SHS 810	SHS 815	SHS 820
Bandwidth	60MHz	100MHz	150MHz	200MHz
Sampling Rate	1CH: 1GSa/s 2CH: 500MSa/s			500MSa/s
Equivalent Sampling Rate	50GSa/s			
Memory Depth	2Mpts			32kpts
Rise Time	≤5,8ns	≤3,5ns	≤2,3ns	≤1,7ns
Input Impedance	1MΩ ± 2%||18pF ± 3pf			
Time Base Range	5ns/div-50s/div	2,5ns/div-50s/div		
	Scan: 100ms-50s/div			
Vertical Sensitivity	2mV/div – 100V/div (1-2-5 step)			
Vertical Resolution	8 bit			
Trigger Types	Edge, slope, pulse, video, alternative			
Frequency Counter	6 bit			
Connection	USB device, USB host			
Oscilloscope Trend Plot	800kpts			
Display	5,7" LCD Color (320X234px)			

Meter

Maximum Resolution	6000		
Function	Range	Resolution	Accuracy
DC Voltage	60mV	10µV	(± 1% ± 15 digits)
	600mV	100µV	(± 1% ± 5 digits)
	6V	1mV	
	60V	10mV	
	600V	100mV	
	1000V	1V	
AC Voltage	60mV	10µV	(± 1% ± 15 digits)
	600mV	100µV	(± 1% ± 5 digits)
	6V	1mV	
	60V	10mV	
	600V	100mV	
	1000V	1V	
DC Current	60mA	10µA	(± 1% ± 5 digits)
	600mA	100µA	(± 1,5% ± 5 digits)
	6A	1mA	
	10A	10mA	
AC Current	60mA	10µA	(± 1% ± 5 digits)
	600mA	100µA	(± 1,5% ± 5 digits)
	6A	1mA	
	10A	10mA	
Resistance	600Ω	0,1Ω	(± 1% ± 5 digits)
	6kΩ	1Ω	
	60kΩ	10Ω	
	600kΩ	100Ω	
	6MΩ	1kΩ	
	60MΩ	10kΩ	
Capacitance	40nF	0,01nF	(± 3% ± 10 digits)
	400nF	0,1nF	(± 4% ± 5 digits)
	4µF	1nF	
	40µF	10nF	
	400µF	100nF	
Diode	0 – 2V		
Continuity	< 50Ω buzzer sounds		

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Acquisition System					
Sampling Types	real time, equivalent				
Sampling Mode	sampling, peak detection, average				
Average Times	4, 16, 32, 64, 128, 256				
Input System					
Input Coupling	AC, DC, GND				
Input Impedance	1MΩ ± 2% || 18pF ± 3pF				
Probe Attenuator	1X, 10X				
Probe Attenuator Factors Set	1X, 5X, 10X, 50X, 100X, 500X, 1000X				
Maximum Voltage from BNC (Reference BNC Cover)	overvoltage category	maximum voltage			
	CAT II	300Vrms			
	CAT III	150Vrms			
Standard Probe 10X	overvoltage category	maximum voltage			
	CAT II	400Vrms			
Optional Probe 10X	overvoltage category	maximum voltage			
	CAT II	1000Vrms			
Maximum Floating Voltage from Multimeter Reference to Earth Ground	overvoltage category	maximum voltage			
	CAT II	600Vrms			
	CAT III	300Vrms			
Single Channel Common Mode Rejection Ratio	> 100 : 1 50MHz				
Channel – to – Channel Isolation	> 35dB				
Horizontal System					
Real Time Sampling Rate	single channel 50Sa/s – 1GSa/s				
	double channel 50Sa/s – 500MSa/s				
Equivalent Sampling Rate	50GSa/s				
Interaction Mode	Line, (Sinx)/x				
Memory Depth	SHS 806 SHS 810 SHS 815	channel mode	sample rate	normal	long memory
		single channel	1GSa/s	40kpts	nonsupport
		single channel	≤ 500MSa/s	20kpts	2Mpts
		double channel	≤ 500MSa/s	20kpts	1Mpts
	SHS 820	single channel: 32kpts		double channel: 16kpts	
Display Mode	MAIN, WINDOW, ZOOM, SCAN, X-Y				
Time Base Accuracy	± 50ppm measured over 1ms interval				
Horizontal Scan Range	2,5ns/div – 50s/div (SHS 820) 2,5ns/div – 50s/div (SHS 815) 2,5ns/div – 50s/div (SHS 810) 5ns/div – 50s/div (SHS 806)				
	scan: 100ms/div ~ 50s/div (1 -2.5-5 sequence)				
Vertical System					
Vertical Sensitivity	2mV – 100V/div (1 -2 -5 order)				
Channel Voltage Offset Range	2mV – 200mV: ± 1,6V 206mV – 10V: ± 40V 10,2V – 100V: ± 400V				
Vertical Resolution	8 bit				
Channels	2				
Analog Bandwidth	60MHz (SHS 806) 100MHz (SHS 810) 150MHz (SHS 815) 200MHz (SHS 820)				
Lower Frequency Limit (AC -3dB)	≤ 10Hz				
DC Gain Accuracy	≤ ± 3%: 5mv/div to 100V/div ≤ ± 4%: 2mv/div				
DC Measurement Accuracy: All Gain Settings ≤100mV/div	± [3% * (|reading| + |offset|) + 1% * |offset| + 0,2div + 2mV]				
DC Measurement Accuracy: All Gain Settings >100mV/div	± [3% * (|reading| + |offset|) + 1% * |offset| + 0,2div + 100mV]				

Rise Time	≤ 1,7ns (SHS 820) ≤ 2,3ns (SHS 815) ≤ 3,5ns (SHS 810) ≤ 5,8ns (SHS 806)
Vertical Input Coupling	AC, DC, GND
Math Operation	+, -, *, /, FFT
FFT	window mode: Hanning, Hamming, Blackman, Rectangular sampling points: 1024
Bandwidth Limited	20MHz (-3dB)
Trigger System	
Trigger Types	edge, pulse width, video, slope, alternative
Trigger Modes	auto, normal, single
Trigger Sources	CH 1, CH 2
Trigger Coupling	AC, DC, LF reject, HF reject
Trigger Level Range	CH 1-2: ± 6 divisions from center of screen
Trigger Displacement	pre – trigger: (memory depth / (2 * sampling)) delay trigger: 268,04div
Hold off Range	100ns – 1,5s
Edge Trigger	edge type: rising, falling, rising and falling
Pulse Width Trigger	trigger modes: (>, <, =) positive pulse width, (>, <, =) negative pulse width pulse width range: 20ns – 10s
Video Trigger	support signal formats: PAL/SECAM, NTSC trigger condition: odd field, even field, all lines, line Num
Slope Trigger	(>, <, =) positive slope, (>, <, =) negative slope time: 20ns – 10s
Alternative Trigger	CH1 trigger type: edge, pulse, video, slope CH2 trigger type: edge, pulse, video, slope
X – Y Mode	
X – Pole Input / Y – Pole Input	Channel 1 (CH1) / Channel 2 (CH2)
Sample Frequency	25kSa/s – 250MSa/s (1-2,5-5 step)
Control Panel Function	
Auto Set	auto adjusting the vertical, horizontal system and trigger position
Save/Recall	support 2 group referenced waveforms, 20 group setups, 10 group captured waveforms internal storage / recall function and USB flash driver storage function
Hardware Frequency Counter	
Reading resolution	1Hz
Range	DC couple, 10Hz to max. bandwidth
Signal Types	applying to all trigger signals (except video trigger)
Measure System	
Auto Measure	Vpp, Vmax, Vmin, Vamp, Vtop, Vbase, Vavg, Mean, Crms, Vrms, ROVShoot, FOVShoot, RPREShoot, FPREShoot, rise time, fall time, Freq, Period, +Wid, -Wid, +Dut, -Dut, Bwid, Phase, FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF
Cursor Measure	manual mode, track mode and auto mode
Multimeter	
Maximum Resolution	6000 counts
Measure Function	DCV, ACV, DCI, ACI, resistance, diode, capacitance, continuity
Maximum Input Voltage	AC (Vrms): 750V (AC frequency: 20Hz – 1kHz) DC: 1000V
Maximum Input Current	AC (Vrms): 10A (AC frequency: 20Hz – 1kHz) DC: 10A
Impedance	10MΩ
Scope TrendPlot (Recorder)	
Display	all, normal
Record Size	800K points, more than 18 hours
Record Channel	2 channels
Cursor, Zoom	support
Manual Mode	support

Meter TrendPlot (Recorder)				
Display	all, normal			
Record Size	1,2M points			
Record Channel	1 channel			
Cursor, Zoom	support			
Manual Mode	support			
Scope Record (Recorder)				
Function	record scope waveforms, replay recorded waveforms			
Acquisition Mode	scan mode			
Time	record mode: recording time replay mode: replay time			
Sets	viewer: full screen, split screen record mode: continuous, single replay mode: point, frame save mode: internal memory			
Default	viewer: split screen record mode: continuous replay mode: point save mode: internal memory			
Record Size	total: 7M points single channel: 7M points single channel double channel: 3,5M points per channel			
Record Manual	start, pause, stop, continue			
Replay Manual	start, pause, stop continue, previous, next			
Display				
Display Mode	color TFT 5,7” diagonal liquid crystal display			
Resolution	320 horizontal by 234 vertical pixels			
Display Color	24bit color			
Display Contrast (Typical state)	150:1			
Backlight Intensity (Typical state)	300nit			
Waveform Display Range	8 x 12 div			
Waveform Display Mode	dots, vector			
Persist	off, 1 sec, 2 sec, 5 sec, infinite			
Menu Display	2 sec, 5 sec, 10 sec, 20 sec, infinite			
Skin	succinct, modern, tradition, classics			
Screen Saver	1min, 2min, 5min, 10min, 15min, 30min, 1hour, 2hour, 5hour, off			
Waveform Interpolation	Sin(x)/x, linear			
Color Model	normal, invert			
Language	English, French, German, Russian, Spanish, Simplified Chinese, Traditional Chinese Portuguese, Japanese, Korean, Italian, Arabic			
Environments				
Temperature	operating: 0°C to +40°C		non-operating: -20°C to +70°C	
Cooling	natural cooling			
Humidity	85%RH, 40° C			
Height	3000m			
Power Supply				
Line Power Adapter	input voltage	100V – 240V 50 / 60Hz		
	output voltage	9V 4A		
Battery	7,4VDC, 5000mAh, persisting 5 hours			
Charge Time	about 4 hours			
Mechanical				
Dimension	length	width	height	
	259,5mm	163,2mm	53,3mm	
Weight	1,5kg			

We pursue a policy of continuous and product improvement. Thus the specifications and picture in this data sheet and control location at the front panel may be changed.

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